



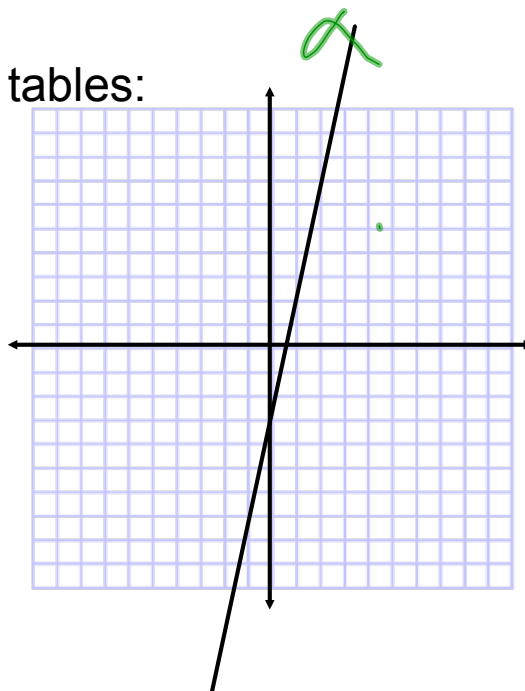
4.4 Slope of a Line

Before we get started, check this out!



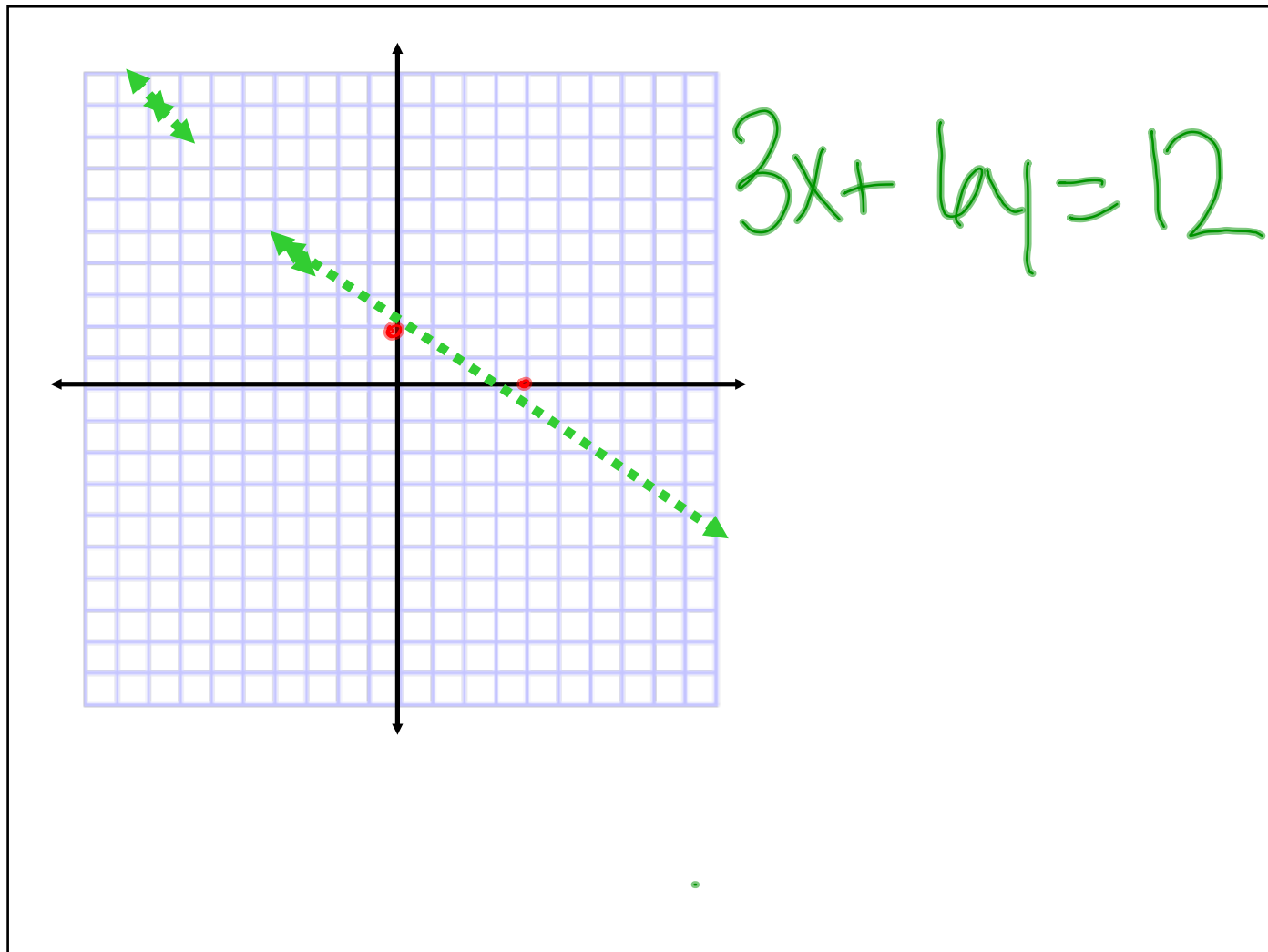
GRAPH using X & Y tables:

$$3y - 12 = 9y$$



<

v)



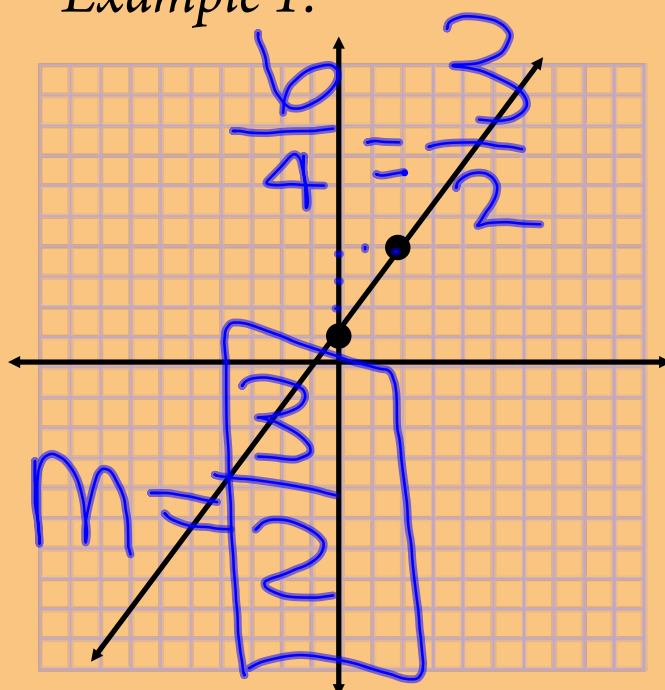
Now, on to slope!

m is the variable used to represent the slope of a line

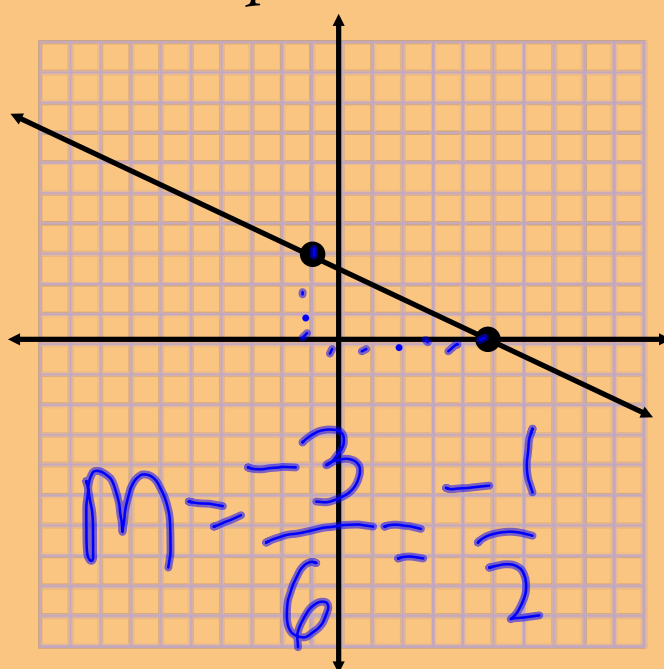
$$m = \frac{\text{rise}}{\text{run}} \text{ "rise over run"}$$

Goal 1: Count slope visually using rise over run.

Example 1:



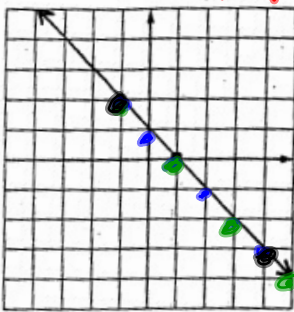
Example 2:



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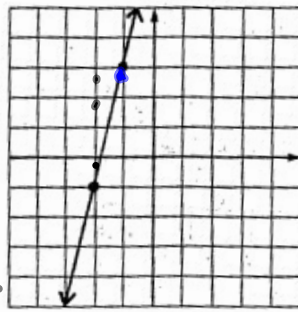
State the slope of each line.

1.



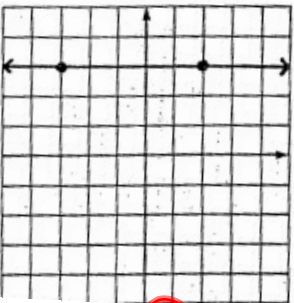
$$m = \frac{-2}{2} = -1$$

2.



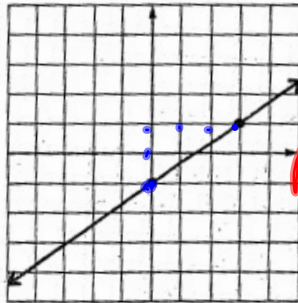
$$m = \frac{4}{1}$$

3.



$$m = \frac{0}{5} = 0$$

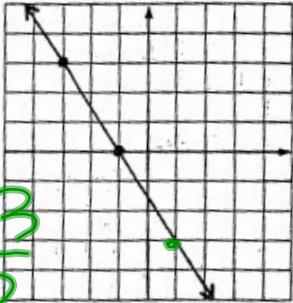
4.



$$m = \frac{2}{3}$$

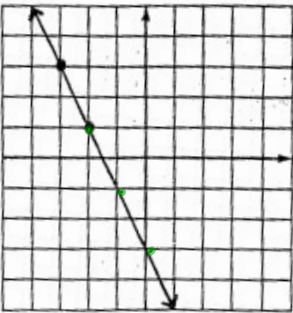
$$\left(\frac{-4}{-1} \right) = 4$$

5.



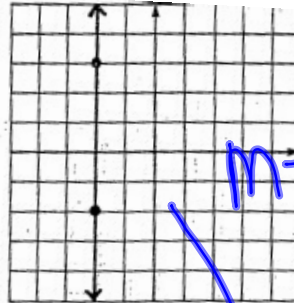
$$m = -\frac{3}{2}$$

7.



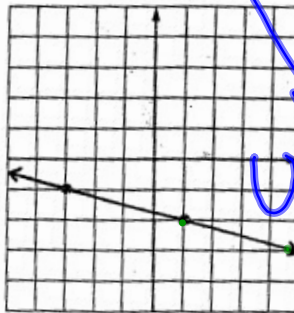
$$m = -\frac{2}{1}$$

6.



$$m = \frac{-5}{0}$$

8.

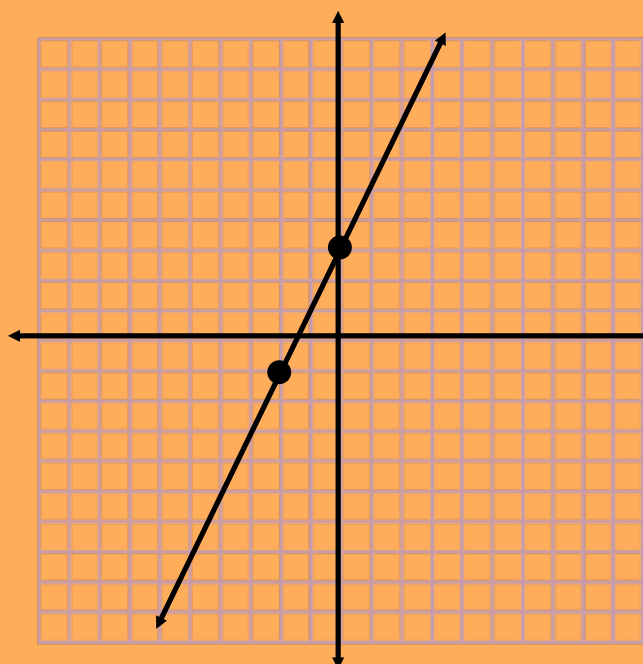


$$\frac{15}{0}$$

Undefined

$$m = -\frac{1}{4}$$

$$\frac{10}{5} = 2$$



Example 3:

Count the slope.

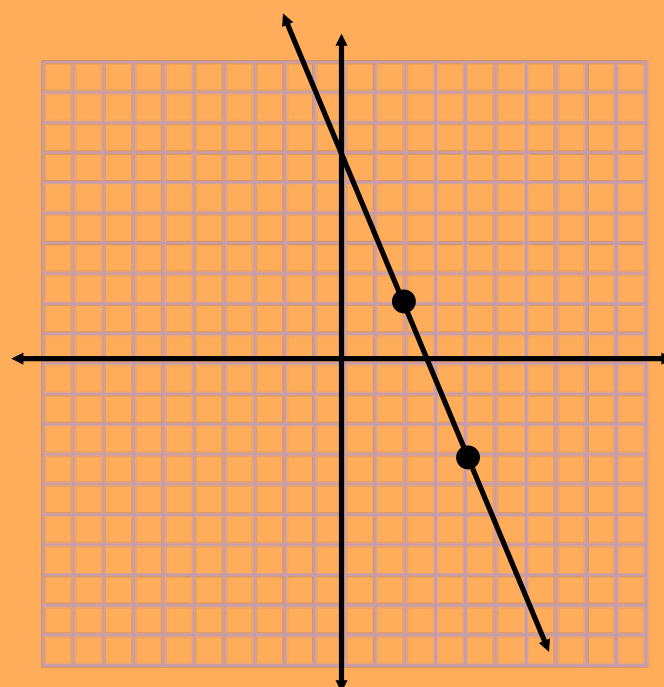
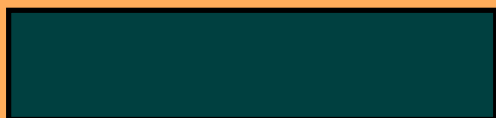
What do you notice about the slopes of lines that go up (from left to right)?



Example 4:

Count the slope.

What do you notice about the slopes of lines that go down (from left to right)?



Goal 2: Find slope of a line mathematically.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Read x_1 as x sub one. Think of it as "x-coordinate of the first point".

Read y_2 as y sub two. Think of it as "y-coordinate of the second point".

***Be careful to put the coordinates in the correct spot!**

Example 5:

Find the slope of a line that passes through $(-3, 0)$ and $(-1, 6)$.

$$x_2 - x_1$$

$$y_2 - y_1$$

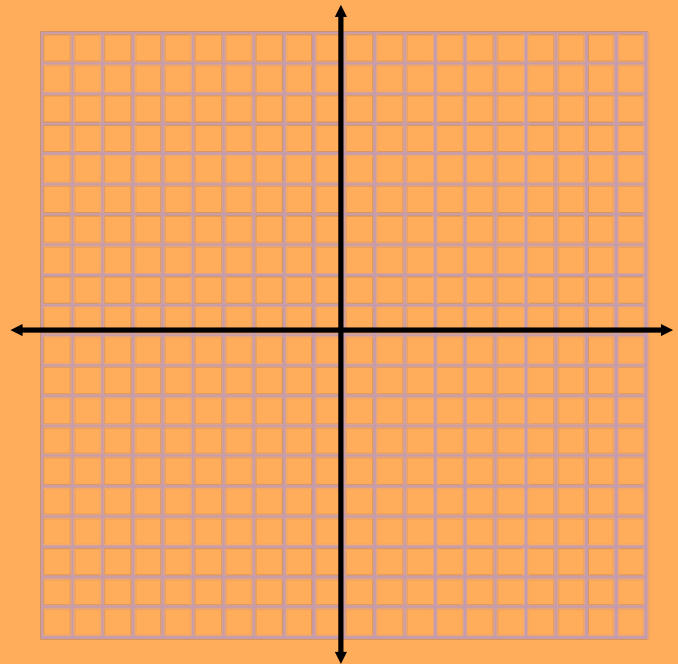
$$\frac{6 - 0}{-1 + 3} = \frac{6}{2} = \boxed{\frac{3}{1}}$$

Example 6: Find the slope of the line passing through $(-1, -3)$ and $(5, -3)$.

$$m = \frac{0}{6} = 0$$

If zero is in your slope, you MUST tell what that means!!!

Example 7: Find the slope of a line that passes through $(0, -1)$ and $(0, 4)$.



Example 8: OMG will we ever be done?

Find the value of y so that the line passing through the points $(3, y)$ and $(1, 5)$ has a slope of -2 .



Homework!

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Page 233 #84 - 95 ALL